

WHAT IS CLAIMED IS:

1. A plate supplying apparatus for supplying a plate,  
which is transferred such that its faces are reversed, from a pile  
5 of plates each alternating with a slip sheet, the apparatus  
comprising:

a storage section for storing the pile of plates each  
alternating with the slip sheet;

a plate suction section for sucking a proximal end  
10 portion of a plate present at the top of the pile of plates stored  
in the storage section, the proximal end portion being nearer to  
the plate suction section;

a base member for supporting the plate suction section;

a moving and pivoting mechanism for moving the plate  
15 suction section and the base member in a direction toward a portion  
of the plate opposite to the proximal end portion, while causing  
at least the plate suction section to pivot, thereby transferring  
the plate sucked by the plate suction section such that its faces  
are reversed;

20 a vertical movement mechanism for causing the plate  
suction section to move up and down with respect to the base member;

a control section for controlling movement of each of  
the plate suction section, the moving and pivoting mechanism, and  
the vertical movement mechanism; and

25 a supplying section for supplying the plate transferred

by the moving and pivoting mechanism toward another equipment device,

wherein the control section controls the plate suction section so as to suck the plate, and then controls the vertical movement mechanism so as to cause the plate suction section to move up and down, thereby performing a separating operation for shaking off a slip sheet adhering to a back face of the plate, and thereafter the control section controls the moving and pivoting mechanism so as to transfer toward the supplying section the plate on which the separating operation has been performed by the vertical movement mechanism.

2. The plate supplying apparatus according to claim 1, wherein the control section controls the plate suction section so as to suck the plate, and then controls the vertical movement mechanism so as to cause the plate suction section to repeat a slight ascent or descent and a pause, thereby shaking off the slip sheet adhering to the back face of the plate.

3. The plate supplying apparatus according to claim 1, wherein the control section controls the plate suction section so as to suck the plate, and then controls the moving and pivoting mechanism so as to cause the plate suction section and the base member to pivot a prescribed angle, and thereafter the control section controls the vertical movement mechanism so as to cause

the plate suction section to move up and down, thereby shaking off the slip sheet adhering to the back face of the plate.

4. The plate supplying apparatus according to claim  
5 1, wherein the control section controls the vertical movement mechanism so as to shorten a distance between the base member and a position at which the plate suction section sucks the plate, and then controls the moving and pivoting mechanism so as to cause the plate suction section and the base member to move while pivoting,  
10 thereby transferring the plate.

5. The plate supplying apparatus according to claim  
4, wherein the control section controls the vertical movement mechanism so as to cause the plate suction section to further move  
15 up or down such that the proximal end of the plate, which has been transferred by the moving and pivoting mechanism such that its faces are reversed, is aligned with the supplying section.

6. The plate supplying apparatus according to claim  
20 1, wherein the control section controls the vertical movement mechanism so as to adjust, in accordance with a vertical position of the plate present at the top of the pile of plates stored in the storage section within the plate supplying apparatus, a distance between the base member and a position at which the plate  
25 suction section sucks the plate present at the top of the pile

of plates, and after the adjustment of the distance, the control section controls the plate suction section so as to suck the proximal end portion of the plate present at the top of the pile of plates.

5           7. The plate supplying apparatus according to claim 1, wherein the control section controls the vertical movement mechanism so as to adjust, in accordance with a remaining amount of the pile of plates stored in the storage section, a distance between the base member and a position at which the plate suction  
10 section sucks the plate present at the top of the pile of plates, and then the control section controls the plate suction section so as to suck the proximal end portion of the plate present at the top of the pile of plates.

15           8. The plate supplying apparatus according to claim 1, wherein:

the storage section stores a plurality of piles of plates side-by-side, each plate alternating with a slip sheet;

the plate supplying apparatus comprises a plurality of  
20 plate suction sections each provided for a corresponding one of the piles of plates stored in the storage section;

the plate supplying apparatus comprises a plurality of vertical movement mechanisms each provided for a corresponding one of the plate suction sections; and

25 the control section controls each of the vertical

movement mechanisms so as to adjust, in accordance with a remaining amount of each pile of plates stored in the storage section, a distance between the base member and a position at which each of the plate suction sections sucks a plate present at the top of a corresponding one of the piles of plates, and then the control section controls each of the plate suction sections so as to suck a proximal end portion of the plate present at the top of the corresponding one of the piles of plates.

10           9. The plate supplying apparatus according to claim 1, wherein the vertical movement mechanism includes:

          a rod having the plate suction section provided at an end portion thereof; and

          a rod expansion and contraction mechanism for moving  
15 the rod along a longitudinal direction of the rod with respect to the base member.

          10. A plate supplying apparatus for supplying a plate, which is transferred such that its faces are reversed, from a pile  
20 of plates, the apparatus comprising:

          a storage section for storing the pile of plates;

          a plate suction section for sucking a proximal end portion of a plate present at the top of the pile of plates stored in the storage section, the proximal end portion being nearer to  
25 the plate sucking section;

a base member for supporting the plate suction section;

a moving and pivoting mechanism for moving the plate suction section and the base member in a direction toward a portion of the plate opposite to the proximal end portion, while causing  
5 at least the plate suction section to pivot, thereby transferring the plate sucked by the plate suction section such that its faces are reversed;

a vertical movement mechanism for causing the plate suction section to move up and down with respect to the base member;

10 a control section for controlling movement of each of the plate suction section, the moving and pivoting mechanism, and the vertical movement mechanism; and

a supplying section for supplying the plate transferred by the moving and pivoting mechanism toward another equipment  
15 device,

wherein the control section controls the plate suction section so as to suck the plate, and then controls the vertical movement mechanism so as to cause the plate suction section to move up and down, thereby performing a separating operation for  
20 shaking off another plate adhering to a back face of the plate sucked by the plate suction section, and thereafter the control section controls the moving and pivoting mechanism so as to transfer toward the supplying section the plate on which the separating operation has been performed by the vertical movement mechanism.

25

11. A plate supplying apparatus for supplying a plate which is transferred such that its faces are reversed, the plate being present at the top of a pile of plates, the apparatus comprising:

5           a storage section for storing the pile of plates;  
          a raising and lowering mechanism for raising and lowering the storage section;

          a plate suction section for sucking a proximal end portion of the plate present at the top of the pile of plates stored  
10   in the storage section placed in a first position, the proximal end portion being nearer to the plate suction section;

          a moving and pivoting mechanism for moving the plate suction section and the base member in a direction toward a portion of the plate opposite to the proximal end portion, while causing  
15   at least the plate suction section to pivot, thereby transferring the plate sucked by the plate suction section such that its faces are reversed;

          a control section for controlling movement of each of the plate suction section, the raising and lowering mechanism,  
20   and the moving and pivoting mechanism; and

          a supplying section for supplying the plate transferred by the moving and pivoting mechanism toward another equipment device,

          wherein the control section controls the raising and  
25   lowering mechanism so as to cause the storage section to move to

the first position, and then controls the plate suction section so as to suck the plate, and thereafter the control section controls the raising and lowering mechanism so as to lower the storage section from the first position to a second position, and then controls  
5 the moving and pivoting mechanism so as to transfer the plate toward the supplying section, while keeping the storage section placed in the second position.

12. The plate supplying apparatus according to claim  
10 11, wherein the control section controls the plate suction section so as to suck the plate, and then controls the moving and pivoting mechanism so as to cause the plate suction section to pivot a prescribed angle, and thereafter the control section controls the raising and lowering mechanism so as to lower the storage section  
15 to the second position.

13. The plate supplying apparatus according to claim  
12, wherein:

the storage section stores a pile of plates each  
20 alternating with a slip sheet; and

the control section controls the suction section so as  
to suck the plate, and then controls the raising and lowering  
mechanism so as to lower the storage section from the first position  
to the second position, and thereafter the control section controls  
25 the moving and pivoting mechanism to cause the plate suction section



to move back and forth, while pivoting, thereby performing a separating operation for shaking off a slip sheet adhering to a back face of the plate, and to transfer to the supplying section the plate on which the separating operation has been performed.

5

14. A plate supplying apparatus for supplying a plate which is transferred such that its faces are reversed, the apparatus comprising:

a plurality of storage sections each provided for storing  
10 a pile of plates;

a plate suction section for sucking a proximal end portion of a plate present at the top of the pile of plates stored in a storage section, the proximal end portion being nearer to the plate suction section;

15 a base member for supporting the plate suction section;

a moving and pivoting mechanism for moving the plate suction section and the base member in a direction toward a portion of the plate opposite to the proximal end portion, while causing at least the plate suction section to pivot, thereby transferring  
20 the plate sucked by the plate suction section such that its faces are reversed;

a distance adjusting mechanism for adjusting a distance between the base member and the plate suction section;

a supplying section for supplying the plate transferred  
25 by the moving and pivoting mechanism toward another equipment

device, and

a control section for controlling the plate suction section, the distance adjusting mechanism, and the moving and pivoting mechanism, wherein after the distance adjusting mechanism is controlled so as to move the plate suction section with respect to the base member to cause a portion of the plate suction section which sucks the plate to be in contact with the plate present at the top of the pile of plates stored in the storage section, the plate suction section is controlled so as to suck the proximal end portion of the plate present at the top of the pile of plates, and thereafter the moving and pivoting mechanism is controlled so as to transferring the plate to the supplying section while turning over the plate.

15           15. The plate supplying apparatus according to claim 14, further comprising:

a multicassette section for accommodating the plurality of storage sections stacked together in a vertical direction; and

a sliding mechanism for horizontally moving a storage section selected from among the plurality of storage sections to a plate supply position below the moving and pivoting mechanism,

wherein the distance adjusting mechanism moves the plate suction section with respect to the base member so as to cause the plate suction section to be in contact with the plate present at the top of the pile of plates stored in the storage section.

16. The plate supplying apparatus according to claim 15, wherein the distance adjusting mechanism includes:

a rod having the plate suction section provided at an  
5 end thereof; and

a rod expansion and contraction mechanism for moving the rod along a longitudinal direction of the rod with respect to the base member.